

Amendments to the Specification:

Please replace the paragraph beginning on page 6, line 29 with the following amended paragraph:

More specifically, in the detection circuit 28, the first waveform adder 30a adds the outputs of the first detector coil 20a and the reference signal when the exciting coil 16 is energized. Then, the waveform ~~shapers~~ shaper 32a of the first set waveform-shapes the output of the first waveform adder 30a, while the waveform shaper 34a of the first set waveform-shapes the reference signal and output as waveform-shaped pulses. Then, the first phase comparator 36a compares the outputs of the first set of waveform shapers 32a, 34a in phase and outputs the result of the comparison as a pulse. Then, the first integrating circuit 38a converts the pulse output of the first phase comparator 36a into voltage value Va. The devices of the second set act in the similar manner such that the second integrating circuit 38b converts the pulse output of the second phase comparator 36b into voltage value Vb. Then, the differential amplifier 40 inputs the voltage values Va, Vb resulting from the voltage conversion in the first and second integrating circuits 38a, 38b and amplifies the difference between them.